

10/850,550

National Stage Entry of PCT/JP03/007861
Preliminary Amendment
Q89953

AMENDMENTS TO THE SPECIFICATION

Please replace the present title with the following amended title:

Image Display Method and Image Display Apparatus

Please replace paragraph no. 1 on Page 1 with the following rewritten paragraph:

The present invention relates to an image display method characterized in that an image, which is transmitted from a photographic device mounted onto, for example, a helicopter, is displayed being superposed on a map of a geographic information system, thereby enabling to determine situations on the ground easily as well as with sufficient precision in the case where natural disaster such as earthquake or fire, or human disaster such as explosion or serious accident occur; and the invention also relates to an image display apparatus using such an image display method.

Please replace paragraph no. 2 on Page 1 with the following rewritten paragraph:

It is a very important technology to specify a position of an object being located on the ground and having been shot from the air on a map, in view of facilitating judgment of situations on the ground in the case of occurrence of any natural disaster such as earthquake, fire or any man-made disaster such as explosion, serious accident. In the conventional positional specification method and device, as shown, for example, in the Japanese Patent No. 2695393, a shooting position in the air is specified three-dimensionally, a direction of a target with respect to a shooting position is measured, a ground surface where the target resides is obtained based on a three-dimensional topographic data including altitude information as to

Please replace ^{first}second full paragraph on Page 2 with the following rewritten paragraph:

OK
5/10/10

National Stage Entry of PCT/JP03/007861
 Preliminary Amendment
 Q89953

The present invention was made to solve the above-discussed problems, and has an object of providing an image display method in which shot images are displayed being superposed on a map of a geographic information system, thereby enabling to understand area-wide situations on the ground surface having been shot; as well as in which a display position on the map of an image is compensated by comparison between the shot image and the map to carry out the superposed display with high precision, thereby enabling to understand situations of the ground surface having been shot more easily and rapidly; and the invention has another object of providing an image display apparatus using such an image display method.

last *2*
 Please replace **first** full paragraph on Page *2* with the following rewritten

Ham
Shioh
 paragraph:

To accomplish the foregoing objects, in an image display method and an image display apparatus using such an image display method according to the invention, a shot image of the ground surface having been taken with photographic equipment that is mounted on an airframe in the air is image-processed and displayed, a shooting position in the air is specified three-dimensionally, a photographic area on the ground surface having been shot is obtained by computation, and a shot image is transformed in conformity with the mentioned photographic area and thereafter displayed being superposed on a map of a geographic information system.

first
 Please replace **second** full paragraph on Page 3 with the following rewritten

Ham
Shioh
 paragraph:

National Stage Entry of PCT/JP03/007861
Preliminary Amendment
Q89953

In a further image display method and an image display apparatus, a shot image of the ground surface having been taken with photographic equipment that is mounted on an airframe in the air is image-processed and displayed, a shooting position in the air is specified three-dimensionally, a photographic area of the ground surface having been shot is obtained by computation, and a shot image is transformed in conformity with the mentioned photographic area and thereafter displayed being superposed on a map of a geographic information system; and in which landmarks are extracted from a map of the geographic information system and a shot image respectively and the corresponding landmarks are compared, whereby a parameter for use in computing a photographic area of the ground surface having been shot is compensated, and a shot image is displayed being superposed with high precision on a map of the geographic information system.

third
Please replace first full paragraph on Page 3 with the following rewritten

Xan 5/10/10
paragraph:

Fig. 1 is a block diagram showing an image display apparatus for carrying out an image display method according to a first preferred embodiment of the present invention.

first
Please replace fourth full paragraph on Page 4 with the following rewritten

Xan 5/10/10
paragraph:

Fig. 4 is a photograph showing a display screen obtained by an image display method and an image display apparatus according to a second embodiment of the invention.

10/550,550

National Stage Entry of PCT/JP03/007861
Preliminary Amendment
Q89953

eight
Please replace the ~~eleventh~~ full paragraph on Page 4 with the following rewritten paragraph:

Fig. 11 is a diagram for explaining map processing of an image display method and an image display apparatus according to a sixth embodiment of the invention.

ninth
Please replace the ~~twelfth~~ full paragraph on Page 4 with the following rewritten paragraph:

Fig. 12 is a view for explaining map processing of an image display method and an image display apparatus according to a seventh embodiment of the invention.

fourth
Please replace the ~~first~~ full paragraph on Page ~~3~~⁴ with the following rewritten paragraph:

Figs. 13 are views explaining an image display method and an image display apparatus according to an eighth embodiment of the invention.

eleventh
Please replace the ~~second~~ full paragraph on Page ~~5~~⁴ with the following rewritten paragraph:

Fig. 14 is a block diagram showing an image display apparatus for carrying out an image display method according to a ninth embodiment of the invention.

last
Please replace the ~~fourth~~ full paragraph on Page ~~5~~⁴ with the following rewritten paragraph:

Fig. 16 is a flowchart showing operations in the image display method and the image display apparatus according to the ninth embodiment.

10/550,550

National Stage Entry of PCT/JP03/007861
Preliminary Amendment
Q89953

fourth
Please replace the ~~eighth~~ full paragraph on Page 5 with the following rewritten paragraph:

Figs. 20 are views showing effects in the image display method and the image display apparatus according to the ninth embodiment.

seventh
Please replace the ~~last~~ full paragraph on Page 5 with the following rewritten paragraph:

Fig. 23 is a flowchart showing operations in an image display method and an image display apparatus according to a fourteenth embodiment of the invention.

first
Please replace the ~~first~~ paragraph on Page ~~5~~ with the following rewritten paragraph:

Fig. 24 is a view showing effects in the image display method and the image display apparatus according to the fourteenth embodiment.

first
Please replace the first full paragraph on Page ~~7~~⁶ with the following rewritten paragraph:

Hereinafter, an image processing method and an image display apparatus according to a first preferred embodiment of the invention is described with reference to the drawings. Fig. 1 is a block diagram explaining an image display apparatus of carrying out the method of the invention. Fig. 2 is a diagram explaining functions of map processing means. The method and apparatus of the invention are implemented with an on-board system 100 formed of a flight vehicle (=airframe) such as helicopter on which, e.g., photographic equipment (=camera) is

10/250,550

National Stage Entry of PCT/JP03/007861
Preliminary Amendment
Q89953

mounted, and a ground system 200 located on the ground that receives signals from the on-board system 100 and processes them.

first
Please replace the second full paragraph on Page 23 with the following rewritten paragraph:

In the foregoing fifth embodiment, a sea level altitude obtained from the GPS is employed as an altitude of the airframe in computing processing of a photographic frame onto the ground surface after rotation: whereas, in this sixth embodiment, as shown in Fig. 11, a ground surface altitude (relative altitude d = sea level altitude - ground surface altitude) at a shooting point is employed as an altitude of the airframe utilizing a topographic altitude information of the ground surface. In this manner, computing four points of a photographic frame is executed.

second
Please replace the fourth full paragraph on Page 24 with the following rewritten paragraph:

A relative altitude d , which is used herein, is obtained by subtracting a topographic altitude at a target point of land from an absolute altitude from the horizon, which is obtained from the GPS. Further this relative altitude from the camera is utilized, thereby enabling to compute with higher precision the position of a photographic frame.

last
Please replace the first full paragraph on Page 29 with the following rewritten paragraph:

With reference to Fig. 14, current positional information is obtained with airframe position measurement means 108 such as GPS that is mounted on a flight vehicle (=airframe)

National Stage Entry of PCT/JP03/007861
Preliminary Amendment
Q89953

such as helicopter, and the airframe positional measurement is performed. Furthermore, the airframe 101 comprises, e.g., gyro, and posture, i.e., an elevation angle (=pitch) and roll angle are measured with this airframe posture measurement means 107. Photographic means 105, being the camera 102 mounted on the airframe 101 takes a shot of the ground, and outputs image signals thereof as well as outputs camera information such as zoom of the camera. The camera 102 is attached to, e.g., gimbal, and a rotation angle (=pan) and inclination (=tilt) of the camera is measured with this camera posture measurement means 106.

*Kaw
5/10/10*
first
Please replace the ~~third~~ paragraph on Page 35 with the following rewritten

paragraph:

In the case where the corresponding landmarks are extracted also from an image in S25, the landmarks having been obtained in S23 and S25 are compared, and an airframe altitude is compensated so that a distance between 2 points of landmarks on the image and a distance between 2 points of landmarks on the GIS map (in this case, since an airframe altitude is obtained as an absolute altitude from the sea level with the GPS, a relative altitude from the ground surface will be obtained by this altitude compensation) (S27)(S28).

Please replace the last paragraph on Page 43 with the following rewritten

paragraph:

The present invention is applicable to an image display taking a shot of situations on the ground from on board such as helicopter in the case where natural disaster such as earthquake or fire occurs or where human disaster such as explosion or serious accident occur.